THE HALLOPUS, BAPTANODON, AND ATLANTOSAURUS BEDS OF MARSH

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HALLOPUS BEDS

In the *American Journal of Science* for October, 1891, Professor O. C. Marsh proposed the name "Hallopus beds" for a somewhat indeterminate horizon of vertebrate fossils, as follows:

> Near the base of the Jurassic a new horizon may now be defined as the Hallopus beds, as here alone remains of the remarkable reptile named by the author *Hallopus victor* have been found. Another diminutive dinosaur, *Nanosaurus*, occurs in the same strata. The horizon is believed to be lower than the Baptanodon beds, though the two have not been found together. The Hallopus beds now known are in Colorado, below the Atlantosaurus beds, but quite distinct from them.
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> The Baptanodon beds have been found in many localities everywhere beneath the Atlantosaurus beds, and having below them, at various localities, a series of red beds, which may, perhaps, contain the Hallopus horizon, but are generally regarded as Triassic.

This reference of Marsh to a vertebrate horizon below the marine Jurassic of the Rocky Mountain region has been wholly overlooked or disregarded by subsequent writers, the fauna itself having been referred to the "Upper Jura." I am now in a position, I believe, to show that the horizon is a distinct one, and that it belongs, not to the Lower Jurassic, but to the Upper Triassic. I, furthermore, believe that the horizon will eventually be found to be widely fossiliferous in the Rocky Mountain region.

Although I cannot be entirely sure, after so long an interval, it is my recollection that the type specimen of *Hallopus victor* was discovered by Mr. M. P. Felch in August, 1877, in Garden Park, near Cañon City, Colo., a few weeks before the time of my first visit to that since famous locality. The precise spot whence the specimen came was pointed out to me, the base of an escarpment of red sandstone, whither the specimen had fallen from the overhanging

cliff. Its precise horizon in the cliff was never ascertained, though the block of red sandstone in which the fossil was inclosed left no doubt as to its derivation. This peculiar character of the matrix, so different from anything found in the Atlantosaurus beds, has been mentioned by Marsh, though he never gave definite information as to the location of the discovery.

Of the other specimen, that upon which was based the genus *Nanosaurus* originally, I have no clear recollection, though I have no doubt it was from the same spot and horizon as the type of *Hallopus*. The fact that only one-half of the split slab was obtained, as mentioned by Marsh, indicates that the specimen was not discovered *in situ*. At the time of my first visit to Cañon City, in September or early October of 1877, I searched diligently in the adjacent red sandstones for the Hallopus horizon, but without success.

In July of the past year Mr. W. H. Reed, of the University of Wyoming, informed me that he had, some years previously, discovered vertebrate fossils in the red sandstones of the Red Mountain region, south of Laramie City, Wyo., and very kindly took me to the place of his discovery. We found there numerous fragments of bones, scattered along a thin stratum, near the top of the red beds. The marine Jurassic is here wanting, as at Cañon City, the sandstone of the Morrison or Atlantosaurus beds overlying the red beds without marked unconformity. The lower members of these beds consist of a grayish or yellowish sandstone, and are unfossiliferous, the first vertebrate fossils occurring seventy-five feet or more above the red-beds horizon. Because of an apparent absence of distinctive Triassic fossils among those secured in the short time at our disposal, I was somewhat inclined at the time to refer this horizon to the Lower Jurassic, or possibly as a fresh-water equivalent of the Baptanodon beds; the more so from the fact that the crocodile remains obtained seemed to approach the mesosuchian type.

At my request, however, Mr. Reed spent some time later in a further examination of the deposits, the results of which he has recently sent me. Among the material which he obtained there are very characteristic labyrinthodont plates and vertebræ, proving conclusively the Triassic age of the deposits. Furthermore, the occurrence of the bones in the red sandstone stratigraphically quite

conformable with, and undifferentiated from, the red beds below, seems to render any other disposition of the horizon out of the question.

The differences of these fossils from those obtained in the Lander region from an horizon fully two hundred and fifty feet below the top of the beds, are such that their contemporaneity of deposition is very improbable. These differences are especially noticeable, *inter alia*, in the apparent absence of the teeth so characteristic of those and many other American Triassic deposits—teeth usually referred to a somewhat problematical genus of dinosaurs, called *Paleoctonus*. These teeth, however, are of several types, and it is very probable that none of them belong with dinosaurs. Indeed, the association of one of the forms with the genus *Dolichobrachium* Williston seems now assured. This genus, however, seems closely allied to, possibly identical with, the genus *Theriodesmus* from the Karoo beds of South Africa—a problematical genus whose relationships are yet quite unknown. So different, indeed, is the genus, or at least *Dolichobrachium*, that it must be ascribed to a distinct group, perhaps order of reptiles. It is interesting, also, to observe that a recent letter from Dr. Broom confirms the reference of the Anomodont-like reptiles described by me to the true dicynodonts.

Nothing of the kind has been discovered in the Connecticut valley Trias, while the occurrence of true dinosaurs in those beds, as also pseudosuchian crocodiles, none of which have been certainly found in the Triassic deposits of the West, save the Hallopus beds, would indicate that the most eastern deposits are of a different, perhaps later, age. I am much inclined to believe that the Popo Agie beds, which may be contemporaneous with those yielding vertebrate fossils in Utah, Arizona, New Mexico, and Texas, are of early Keuper age, while the Connecticut valley, the Red Mountain, and Hallopus beds of southern Colorado are later in time.

Taking all the facts into consideration, I believe that the horizon of the Red Mountain beds is nearly or quite identical with that of the Hallopus beds of Cañon City.

That the Hallopus beds of Colorado are of Lower Jurassic age there is not a particle of evidence, unless it be in the ornithopodous character of the dinosaur *Nanosaurus*, a type never before found so low, though confidently expected from the Trias. The primitive

characters of *Hallopus* are shown especially in the sacrum. The type specimen, as Marsh has said, came from an horizon far below the lowermost of those yielding sauropodous remains. Hatcher has said that "no fossils have been obtained from the Red Beds of Garden Park"—an error.

BAPTANODON BEDS

From the Baptanodon beds of Wyoming three genera and eight species of vertebrates have been described: *Baptanodon discus* Marsh, *B. natans* Marsh, *B. marshi* Knight, *Pantosaurus striatus* Marsh, *Megalneusaurus rex* Knight, *Cimoliasaurus laramiensis* Knight, *Plesiosaurus shirleyensis* Knight, and *Diplosaurus nanus* Marsh. Of these I am not satisfied of the distinction between *Pantosaurus striatus* and *Plesiosaurus shirleyensis.*

On the evidence which seemed to be presented by *Baptanodon*, Hatcher was inclined to refer these beds to the Middle Jurassic: "The vertebrates of these marine beds point to a somewhat greater antiquity than do the invertebrates, for *Baptanodon*, the most abundant and best-known form, has its nearest ally in the *Ophthalmosaurus* of Europe;"[1] from which, as he rightfully says, it is scarcely distinguishable generically. While *Ophthalmosaurus* is typically[2] from the Middle Jurassic, another species[3] has been described from the Cambridge Greensand (Upper Cretaceous). While it is very possible, indeed not improbable, that these two species are not congeneric, it is also apparently quite true that *Baptanodon* seems to be as closely allied to the Cretaceous as to the Jurassic species. Indeed, in speaking of the Cretaceous form, Lydekker says: "This species may belong in *Baptanodon.*" It is therefore evident that, so far as our knowledge yet goes, *Baptanodon* is worthless as a Leitfossil.

In a later, posthumous[4], paper Hatcher has said: "that these beds are of Upper Jurassic has not been questioned, and is abundantly confirmed by both their vertebrate and invertebrate faunas;" from which it is evident that he later placed no value on the relationships

[1] *Memoirs of the Carnegie Museum*, Vol. II (1903), p. 71.

[2] *O. icenicus* Seeley, *Quarterly Journal of the Geographical Society*, Vol. XXX (1874), p. 696.

[3] *O. cantabrigiensis* Lydekker, *ibid.; Geological Magazine* (3), Vol. V (1888), p. 310.

[4] *Proceedings of the American Philosophical Society*, Vol. XLIII (1904), p. 354.

of *Baptanodon* with the Jurassic *Ophthalmosaurus*, the only vertebrate which hitherto has been considered in their correlation.

I have studied all the types of the described species of plesiosaurs from these beds, and have examined all other material known from this horizon. These species all agree in having single-headed cervical ribs, and broad and short epipodials. From a somewhat careful study of the literature of English plesiosaurs, the earliest recorded occurrence of forms with single-headed cervical ribs that I can find is in the Oxford Clay, as is also the earliest of the short epipodial forms. One species described from the Baptanodon beds and referred to Cimoliasaurus (to which it probably does not belong) has three epipodial bones, as I am satisfied from an examination of the type specimen. The earliest European species having three epipodials, so far as I can ascertain, is from the Kimmeridge. All these characters are specializations, which became predominant in the Cretaceous, the elongated epipodials utterly disappearing. While species with two epipodials continue quite into the Fort Pierre Cretaceous, the length of the bones is materially lessened. The conclusion, therefore, to be derived from the plesiosaurs is that the beds are not older than the Kimmeridge. This conclusion is, of course, not decisive, as it may be that such specializations will yet be found in older forms in Europe, and since we can conceive of a more advanced evolution of the plesiosaurs in the western continent during these times.

The single crocodile described or named from these beds by Marsh presents no trustworthy evidence yet. Marsh referred the species to the genus *Diplosaurus*,[1] probably identical with the Wealden genus *Goniophilis*, and originally described from the Atlantosaurus beds. Should it prove to be rightly determined generically, it would point strongly to the Upper Jurassic, since no brevirostral crocodile is known from older rocks.

ATLANTOSAURUS BEDS

The age of the Atlantosaurus beds of Marsh, the Morrison beds of Cross, the Beulah shales of Jenney, the Como beds of Scott, has been variously discussed by Marsh, Osborn, Knight, Ward,

[1] *American Journal of Science*, Vol. L (November, 1895), p. 405. See also Marsh, "On the Geology of the Eastern Uintah Mountains," *ibid.*, Vol. I (March, 1871), Sep. p. 7.

Hatcher, and Darton. A résumé of this discussion will be found in Hatcher's recent paper on *Haplocanthosaurus*.[1] It is very evident that the final solution of the problem must be left chiefly to the vertebrate paleontologist, since the evidence presented by the invertebrates and the plants is not only scanty, but also, in the nature of things, insufficient. Aside from the discussions of Marsh, we are chiefly indebted to the late Mr. Hatcher for the presentation of the vertebrate evidence, and it is the views and statements presented by him that I wish to discuss here briefly. I will quote all of importance that he has to say:

> Marsh was wont to correlate the Atlantosaurus beds with the Wealden, which he regarded as of Upper Jurassic age. On just what evidence he relied for this correlation is not quite clear. Nor does a comparison of the dinosaurian faunas of these two horizons seem to warrant such correlation. While from the fragmentary nature of much of the material upon which the different genera and species are based it is clearly impossible to make satisfactory comparisons in many instances between the more closely related genera and species of American and European dinosaurs, nevertheless when comparisons of the faunas as a whole are instituted between the various American and European horizons, most striking and important resemblances and dissimilarities are at once apparent. Thus while in the Atlantosaurus beds the Sauropoda are the predominant forms both as regards size and the number of genera, species and individuals, in the Wealden they are almost entirely replaced by the Predentata and Theropoda. And the Iguanodontia, so abundant in the latter formation, are quite unknown in the former. It is not until we get down into the middle of the Oolite that we find a dinosaurian fauna comparable even with that of the Upper and Middle Atlantosaurus beds.[2]
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> The dinosaurian fauna of the Wealden is certainly quite different and more modern than that of the Atlantosaurus beds. In the Wealden the Sauropod dinosaurs, which form such a conspicuous feature in the faunas of the Middle and Upper Jura, are on the wane, and that group of Predentate dinosaurs known as the Iguanodontia has attained unusual importance, assuming to a certain extent at least, the position formerly held by the Sauropoda. In the Altantosaurus beds, however, the Sauropoda predominate, and the Iguanodont group of the Predentata are represented by smaller and less specialized forms.[3]

From the foregoing it will be seen that Hatcher believed that the lower members of these beds are of real Jurassic age, that is below

[1] *Memoirs of the Carnegie Museum*, Vol. II (1903), p. 68.

[2] *Ibid.*, p. 72.

[3] *Proceedings of the American Philosophical Society*, Vol. XLIII (November, 1903), p. 353.

the Wealden, and, by inference, that they are even of Middle Jurassic age. Marsh consistently believed that they are equivalent to the Wealden of England, which he, however, in company with other good paleontologists, referred to the uppermost Jurassic rather than the lowermost Cretaceous.[1] These opinions from one who justly earned the distinction of being the chief paleontologic geologist among the students of vertebrate fossils in America are deserving of careful consideration. I must frankly say, however, that I am unable to draw any such conclusions as did Mr. Hatcher.

Cetiosaurus longus Owen is from the Great Oolite, or Middle Jura; *C. glymptonensis* Phillips, imperfectly known, is from the same horizon; while *C. brevis* Owen, also imperfectly known, is from the Wealden, but is referred by Seeley to *Ornithopsis*, by Lydekker to *Morosaurus*. *Ornithopsis* Seeley is from the Wealden; *O. humerocristatus* Hulke, from the Kimmeridge. Other, uncertain forms are from the Wealden of England. *Titanosaurus* is referred by Lydekker to probable Upper Greensand. Remains of the Sauropoda are spoken of as "frequent" in the Wealden, while from the Middle Jura only a few are known, and all these are of one, or at most two, species. I certainly cannot see what evidence these forms present that would lead one to say that the American forms are clearly Jurassic. The range of this suborder, so far as is known, is from the Middle Jurassic to the Upper Cretaceous, though there may be doubt as to the real age of the Indian form. Their known geographic distribution is Europe, India, Madagascar, Africa, South and North America—that is, over the whole world. The generalized characters presented by them are not at all sufficiently well understood to say off-hand that certain forms are older than others. No one has been better acquainted with the known dinosauria than the late Professor Marsh, and his opinions as to their relationships ought certainly to have weight, especially as he was inclined, perhaps, to exaggerate differences:

> Nearly all the American Sauropoda, indeed, show a higher degree of specialization than those of Europe, both in this feature [the relative length of the fore and

[1] *American Journal of Science*, Vol. I (1896), p. 234; Vol. II (1896), p. 438. "I have studied the Wealden at many localities in England and on the continent, and it contained a reptilian fauna similar to one I have found in the Rocky Mountains and regarded as Jurassic."

hind limbs] and in some other respects. Portions of one Wealden animal, referred by Mantell to *Pelorosaurus*, are certainly very similar to some of the smaller forms of *Morosaurus*, especially in the proportion of the fore and hind limbs, which are unusually short. This fact would at once distinguish them from *Pelorosaurus*, and, until the skull and more of the skeleton are known, they cannot be separated from *Morosaurus*.[1]

It is quite true that the Brachiosauridae of Riggs (*Brachiosaurus* Riggs and *Haplocanthosaurus* Hatcher) have a more generalized structure in this respect than has *Cetiosaurus* even, but we have no reason to assume that all the generalized forms died out with the advent of specialized ones, such as are most of the American Sauropoda. Nor do I think it quite certain that the Brachiosauridae are the most generalized, certainly not if the hypothesis that the Sauropoda have been derived from primitive ornithopoda is at all probable. Furthermore, the genus *Pleurocoelus*, originally described from the Potomac beds, has been recognized in the Atlantosaurus beds by Marsh, and later by Hatcher, and forms from the Wealden have been referred, provisionally at least, to the same genus.

For the most part, the carnivorous dinosaurs have little value in the correlation of the horizons. *Megalosaurus* is reported from Europe from the Lias to the Wealden. In America we have three or four genera of the Megalosauridae in the Atlantosaurus beds, *Creosaurus*, *Allosaurus*, *Antrodemus*, and *Ceratosaurus*, and the family survived to the Laramie Cretaceous. *Coelurus* was described from the Atlantosaurus beds, but is known to occur in the Potomac beds. In the Wealden of England *Aristosuchus* is very closely allied, indeed is supposed to be identical, and all the other genera referred to the Coeluridae are from the Wealden. In the extensive hollowness of the bones of the skeleton, *Coelurus* is not only the most specialized of dinosaurs, but of all vertebrate animals. The evidence then to be derived from the Theropoda is for the contemporaneity of the Wealden with the Atlantosaurus beds.

So far from the evidence of the Iguanodontia being against this correlation, I believe that it is decidedly for the identity of the two horizons. Iguanodonts are found in abundance in the Atlantosaurus beds, and of the largest size and high specialization. Speaking of them, Marsh has said:

[1] Dinosaurs of North America, p. 184.

None of the [English] genera are known from America, but allied forms are not wanting. The nearest allied genera are apparently *Iguanodon* [Wealden] and *Camptosaurus*, for the large forms, and *Hypsilophodon* [Wealden] and *Laosaurus* for the smaller forms. . . . . Moreover we have in America a closely allied form [to *Hypsilophodon*] *Laosaurus*, of which several species are known.[1]

And, so far from the American forms being the most generalized, Lydekker says that *Hypsilophodon* is "the smallest and least specialized member of the family!" Perhaps this opinion is not decisive, but *Hypsilophodon* certainly cannot be called the most specialized. Lydekker even refers certain Kimmeridge and Wealden species to the American genus *Camptosaurus*.

Perhaps the best evidence we have for the Jurassic age of the American deposits is that of *Stegosaurus*, which is so closely allied to *Omosaurus* Owen from the Kimmeridge that Marsh believed the two genera to be identical. On the other hand, this type of the predentate dinosaurs seems to range from the Lower Lias in *Scelidosaurus*, to *Paleoscincus* from the Laramie, with four or five genera referred to the group from the Wealden. Its value, then, is slight.

Other evidence offered by the reptiles from the American beds is slight. A genus of crocodiles called by Marsh *Diplosaurus* seems to include *Hyposaurus vebbii* Cope from the Comanche Cretaceous of Kansas. Years ago Zittel referred both of these forms to the genus *Goniophilis* from evidence communicated by Professor Marsh, and *Goniophilis* is said to be "a genus very characteristic of the Wealden" (Lydekker). The recently published figure of the type specimen of *Diplosaurus*, when compared with figures of *Goniophilis*, shows a startling resemblance. Indeed, so far as I can learn, there are no brevirostral crocodiles known from below the Purbeck or lithographic slates. The evidence, then, of the crocodiles is decidedly for the uppermost Jurassic or Wealden age of the American beds.

Of the Chelonia the single species *Compsemys plicatulus* Cope (*Glutops ornatus* Marsh) is not at all decisive. If the species is correctly referred to *Compsemys*, all its related forms are of Cretaceous age. Nor is there any evidence to be obtained from the pterosaurs or birds. Of the mammals I will not venture to speak, save that I think that there are too few forms known from the Wealden to offer

[1] *American Journal of Science*, November, 1895, p. 411.

any basis of comparison. Of the fishes a few species of *Ceratodus* only are known, and inasmuch as this genus is supposed to range from the Trias to the present time, these species have no correlating value whatever.

To sum up: there is no valid vertebrate evidence pointing to an age greater than the Purbeck for the Atlantosaurus beds, and but very little for a greater age than that of the Wealden.

Unfortunately, in most of the discussions hitherto the Atlantosaurus beds have been considered as of some brief epoch. The faunas of the upper and lower parts have never been differentiated, save in some exceptional cases. Marsh, indeed, rarely ever gave any precise location for his type specimens, referring them simply to Wyoming, Colorado, etc. The term "Upper Jurassic" has been applied indiscriminately to the whole fauna, as it has, indeed, in the textbooks to the fauna of the Hallopus beds. Hatcher was the first to distinctly point out that the uppermost part of the beds might include a part of the Lower Cretaceous; and Darton has recently separated some of the upper part as Lower Cretaceous under the name of "Lakota beds."

I am strongly of the opinion that these deposits, nowhere, so far as known, exceeding a thickness of 500 feet, really represent various epochs between the Jurassic and the Upper Cretaceous, and that sooner or later we shall have evidence to distinguish the later from the earlier faunas.

A year or two ago Mr. N. H. Brown, of Lander, Wyo., sent some fish teeth to Mr. F. A. Lucas, of the National Museum, for determination. Mr. Lucas, after comparison with the type specimens described by me from the Lower Cretaceous of Kansas, identified them as species of *Scyliorrhinus*. In company with Mr. Brown, I later examined the outcrop whence he had obtained his specimens, near Lander, Wyo., and found it to be in the upper part of the Atlantosaurus beds, and some 15 or 20 feet below an outcrop containing leaves which Mr. Knowlton identified as Dakota. A search in this horizon disclosed numerous specimens of shark and crocodile teeth, four species of which I identified with species obtained from the mentor beds of the Lower Cretaceous, of Kansas, together with numerous fragments of dinosaur bones, among which I recognized

the genus *Laosaurus* described by Marsh from the Atlantosaurus beds.

It may be objected that the specific identity of fish teeth is too doubtful to correlate such remote horizons, and the objection might be valid for single specimens, or even possibly for single species. In this case, however, I did not find a single form that was not represented in the Kansas beds, and the specimens were abundant. Furthermore, the matrix containing the fossils is so nearly identical with that from Kansas that, had anyone given me specimens, without information of their derivation, I should have unhesitatingly referred them to the Kansas beds. The fact, moreover, is of interest as showing a marine fauna. This horizon in Kansas contains not only these species of fishes, but also crocodiles and dinosaurs which I am unable to differentiate from forms from the Atlantosaurus beds, and the Lander horizon contains fossils described by Marsh from the Atlantosaurus beds. The Kansas horizon is high up in the Lower Cretaceous.

About 50 feet below this outcrop of Lower Cretaceous fossils fragments of Sauropodous dinosaurs occurred in the Lander region. The entire thickness of the Atlantosaurus beds here is not more than 250 feet, to the best of my knowledge.

The upper part of the Atlantosaurus beds is, it seems to me, indisputably Cretaceous; the lowermost part is probably not older than the Wealden, though possibly of Purbeckian age. I therefore strongly protest against the common usage of referring all the fossils from these beds to the Upper Jura. Until more is known of the different faunas contained in it, the only proper designation for the composite faunas included in them is Jura-Cretaceous; this assumes that the Wealden is really Jurassic.

I may add that I cannot agree with Mr. Hatcher in his use of the name "Atlantosaurus beds" for these deposits. The name *Atlantosaurus*, it is generally conceded, has no place in zoölogical literature. His comparison with Fort Union is hardly parallel. Nor can I adopt the name "Sauropoda" for the Opisthocoelia of Owen. No one has ever been in doubt as to what the term Opisthocoelia included, and where every student knew its meaning, a precise definition is superfluous.

Because of certain incorrect statements which have been published recently concerning the discovery of the vertebrate fossils of the Atlantosaurus beds, it will be worth while to give briefly the real history. Probably the first specimen of a vertebrate critically studied by a paleontologist from these beds was that described by Leidy in 1873 in his *Contributions to the Extinct Vertebrate Fauna of the Western Territories*, as *Poicilopleuron valens*, and named *Antrodemus* generically in his plate—a genus apparently identical with that afterwards called *Labrosaurus* by Marsh. This specimen was obtained by Hayden in Middle Park, Colo., where similar specimens were reported to be common. Prior to this time Marsh had observed dinosaur bones at the extreme western end of Lake Como, Wyo., in 1868, but had not appreciated the value of his discovery, nor published anything concerning the fossils. The history of the discoveries later may be given as published by me in the *Transactions of the Kansas Academy of Science* for 1878, as follows. I have substituted only the name of Mr. Beckwith for that of Mr. Berthoud, both of whom had been associated with Mr. Lakes in his investigations.

To an English geologist, Professor Arthur Lakes, of Golden, Colo., credit is due for first detecting the osseous character and appreciating the scientific value of the fossils. While engaged one day in March, 1877, in company with Captain H. E. Beckwith, in collecting Dakota leaves from the summit of the ridge or "hog-back" near Morrison, he discovered a huge caudal vertebra in bas-relief upon a slab of sandstone. Upon further investigation, a large quantity of bones was collected and shipped to Professor Marsh, of Yale College, by whom they were described under the name of *Titanosaurus montanus*. Almost contemporaneously with this discovery the fossils were made known at Cañon City by Mr. O. Lucas, a school-teacher, and by Mr. William Reed, an intelligent section foreman of the Union Pacific Railway. Specimens from the former locality were sent to Professor Cope, of Philadelphia, by whom they were named *Camerasaurus supremus*. Since then numerous other localities have become known in Colorado and Wyoming, and I doubt not that future explorations will bring to light scores of outcrops rich in these vertebrate fossils.

In June or July, 1877, Professor B. F. Mudge, of Kansas, was sent to Morrison by Professor Marsh to exploit, in connection with Professor Lakes, the fossils of that region. From there Mudge went shortly to assist Mr. M. P. Felch in opening the famous Marsh quarry

at Garden Park near Cañon City, afterwards worked by Mr. Hatcher. In early September of 1877 I was sent by Professor Marsh to the Morrison locality, and, a few weeks later, to Cañon City, where I remained until November, when I went to Como, now Aurora, Wyo., to open up the first quarry there, with Mr. Reed, who had discovered bones in this region more than a year before.